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OUTLINE OF A PRACTICE-ORIENTED PERSPECTIVE ON COLLABORATIVE CREATIVE DESIGN

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Abstract: Even though there has been a considerable interest in creativity and design as collaborative efforts more recently, there is yet a need for models that provide an integrative perspective on collaborative creative design. While cognitivist accounts of creativity are still quite dominant in the field of design research, it is argued in this paper that respective models fall short to account for the emergent properties and structures that arise out of the interaction of human actors with their environment. To be able to account for the social and material contingencies out of which different forms of creative design take shape a practice-oriented perspective is outlined and its implications discussed. The intent of this primarily theoretical paper is to open up a new research agenda that helps to understand how creative practices take shape and are enacted in particular settings.

Keywords: Collaborative Creative Design, Practice Theory, Conceptual Framework

1. Introduction

The view that creativity and design are essentially social processes, which are often enacted in collaborative endeavours, has gained ground both in research on creativity (e.g. Sawyer, 2012), as well as on design (e.g. Maymkina, Candy, & Edmonds, 2002). In fact it has been argued that most of today's professional design work is carried out in teams, which are themselves embedded into more overarching social and cultural contingencies (Hargadon & Bechky, 2006). Additionally, researchers have called attention to the role of material artefacts for creative design (e.g. Jacucci & Wagner, 2007) while the impact of prescriptive models and methods has been severely challenged (e.g. Stempfle & Badke-Schaub, 2002). At the same time, scholars in the field of design research have called for a stronger orientation of research efforts towards the actual working practices of designers and design teams, echoing what has been called the "practice-turn" in contemporary theory (e.g. Ewenstein & Whyte, 2009), an issue also repeatedly taken up in the extended editorial of the International Journal of Design Creativity and Innovation (Editorial Board of IJDCI, 2013). As a consequence the perspective on creativity and design has been significantly broadened. On the one hand, the number of factors deemed relevant has been extended to account not only for individual but also for social and cultural factors. On the other hand, explorations into actual work processes have raised attention to the situated nature of creativity and design processes. However, while respective studies are useful to broaden our understanding of creativity and design, they are of limited value without a conceptual framework that allows to integrate respective findings in a substantial manner. Without such a

framework it is neither possible to systematically compare collaborative efforts across sites nor to understand how these develop and might be supported or advanced.
In this theoretical paper we argue that recent proposals for a practice-oriented perspective on human interaction (esp. Schatzki, 2001, 2012; Hörning, 2001, 2004) can provide a powerful conceptual framework for the description and analysis of collaborative creative design processes. According to this perspective creativity, or more precisely creative practices, can be understood as those modes of interaction in which individuals or collectives aim to cope productively with an otherwise indeterminate situation and bring forward new ideas. While the social is still often seen as „an external environment, a set of stimulations that facilitate or constrain the creative act" (Glăveanu, 2010, p. 85), a practice-oriented perspective allows to depict creative efforts as interwoven and deeply embedded within the social and material situation from which they arise, but also to pinpoint the ways in which practitioners not only reproduce given ways of working but actively contribute to the advancement of local practices, stressing the dynamicity of collaborative ways of action. The practice-oriented perspective that already has been taken up by some researchers in the field of creative design (e.g. Ehn, 1988; Shove, Watson, Hand & Ingram, 2007) takes a relational stance in that it (1) conceives practices as organized activities, (2) assumes that social as well as individual features of human life are grounded in practice, and (3) that human activity is based on non-propositional bodily abilities (Schatzki, 2012). This perspective is at odds with both individualistic and cognitivist accounts of human action as well as traditional socio-constructivist approaches, and is more than a simple extension of any of these frameworks.
To motivate the need for a new perspective on collaborative creative design, we first argue that the prevailing cognitivist accounts of creativity fall short to account for the emergent properties and structures that arise out of the transactions of human actors with their environment. We then outline a practice-oriented framework on human action and discuss its implications for an understanding of creative design as practice, including the importance of practical understanding and relations in action, the status of design artefacts as well as the role of methods. The paper ends with a summary and a brief discussion of the implications for a research agenda.

2. Collaborative Creative Design – Conceptual Challenges

Despite the recent interest in creativity and design as collaborative efforts and the growing body of empirical studies aimed to deepen the understanding of collaborative creative design, there is a lack of integrative perspectives on the creative process (cf. Hennessey & Amabile, 2010) as well as design creativity (cf. Editorial Board of IJDCI, 2013). A major claim of this paper is that the problems in developing more integrative perspectives on collaborative creative design are largely due to the substantialist perspective (cf. Emirbayer, 1997) that is immanent to the prevailing cognitivistic accounts of creativity and design.
Even though cognitivistic accounts of creative design have been continuously refined and extended (e.g. Visser, 2006), they still share the original commitment to physical symbol systems that interact with its external environment (cf. Vera & Simon, 1993). Starting from the premise that all forms of cognition, including creativity and design, can be traced to the operations of physical symbol systems that interact with the external world, respective accounts are forced to locate all the factors that impact the creative (design) process either within the agent or within the environment (cf. Agre, 1993). Adopting a substantialist worldview, it is not surprising that review articles on creativity as well as design tend to end up with a collection of variables deemed relevant for the explanation of the respective processes and outcomes (e.g. Visser, 2009; Hennessey & Amabile, 2010). For example, variables that have been attributed to the designer include his or her expertise, the perception of the character of the task, idiosyncratic characteristics, and differences in personality while in turn environmental differences include characteristics of the artefact to be produced, the organisation of the design process, the available tools or domain specifities with respect to the involvement of users (cf. Visser, 2009). The conceptual problem inherent to this framework is that all those variables that we deem relevant have to be treated as independent and antecedent to the creative process itself. As a consequence, all those phenomena that emerge only out of transactions between an agent and its environment become intransparent. In particular, cognitivistic accounts fall short to account for a

range of phenomena with respect to the social dimension of creativity and design, the utilization of artefacts, as well as the coordination of the creative process.

Proponents of cognitive design research such as Stempfle & Badke-Schaub (2002) and Visser (2006) have suggested that both individual and collective forms of design draw basically on the same set of cognitive processes. The difference between individual and collective design, according to these authors, is the fact that design teams not just have to work on the design task itself, but additionally have to structure and organize the group process. Willingly or not, this position treats the individual and the social as separate structures, providing no account for "the social roots, social dynamics and social functions of creativity" (Glăveanu, 2010, p. 85). Similarly, in conceiving design artefacts as external representations (cf. Visser, 2006) these are reduced to information carriers or cognitive artefacts, disassociated from their physical existence as well as their social origin. However, such a perspective falls short to account for all those properties of an artefact that only emerge out of its actual use (cf. Orlikowski, 2000). For example, the impact of a paper-based sketch cannot be reduced to its representation format as the act of sketching already implies that a sketch would be a suitable kind of design artefact, which in turn, through its very existence, includes or excludes others from certain types of consecutive actions. The latter argument can also be extended to methods. The question whether certain methods or procedures are relevant and how these are to be enacted properly cannot be assessed independently from the creative processes they are applied to. As argued by Cohn, Sim and Dourish (2010), methodological commitments are not just resources for practical action but "establish a particular discourse in which action unfolds" (p. 45).

In a nutshell, the cognitivistic accounts of creativity and design are essentially concerned with how an existing cognitive system goes about to find solutions for a given task, rather than with those processes through which respective systems come into being, are produced and re-produced in the very course of interactions. This is in contrast to conceptual frameworks that draw on a relational perspective and that emphasize (a) the complex interrelation of individual and collective efforts, in which individuals are shaped by but also shape the social environment they are acting in, (b) the social as well as material nature of artefacts and how these play out in individual and collective efforts, as well as (c) how actors orient their efforts and orchestrate teamwork under conditions of uncertainty and unpredictability.

3. Towards a Practice-Oriented Framework

Relational accounts of collaborative design, as outlined in the preceding section, are not genuinely new to the field of design research. In fact, many of the models that have been subsumed under labels such as situated action (Vera and Simon, 1993) or the situativity approach to design (Visser, 2006) implicitly or explicitly build on a relational worldview. While especially the early proponents of a situated perspective have been criticized for the lack of conceptual clarity and theoretical foundation of their position (e.g. Visser, 2006), a variety of practice-oriented theories has gained momentum more recently, providing more refined and elaborate frameworks for the description and analysis of situated action. The notion of practice has been suggested as basic unit of analysis in a variety of domains, including among others information systems (e.g. Orlikowski, 2000), design (e.g. Shove, Watson, Hand & Ingram, 2007), design research (e.g. Rohde, Stevens, Brödner & Wulf, 2009; Goldkuhl & Julkunen, 2011), and creativity (e.g. Glăveanu, 2012).

However, current theories of social practice form a family of theories rather than a unified framework (Reckwitz, 2002). In the following we introduce some of the main features central to the notion of practice developed by Schatzki (2001, 2012) and Hörning (2001, 2004), providing the background for the subsequent discussion of creative design as a social practice. We assume this perspective to be particularly fruitful as it stresses the inventive and reflexive aspects inherent to social interactions. According to these authors practices are social arrangements of human beings, that in and through their co-related actions form both socially and culturally expectable and comprehensible relations (cf. Hörning, 2001). Actions and practices, from this perspective, are recursively coupled in the sense that each action is shaped by but also re-produces the collective patterns and styles of action (cf. Schatzki, 1996; Hörning, 2001).

Adopting a pragmatist stance, as suggested by Hörning (2001, 2004), this practice-oriented perspective departs from teleological and representational models of human actions to be guided by

antecedent intentions or goals, but posits that intentions and goals are only formed in the course of action itself. Human action is not a sequence of self-contained acts realizing preconceived plans but an on-going process in which the human actors actively frame, respond to and transform the situations they find themselves in, making use of artefacts and resources available. From this perspective humans are active not because they follow some intentions or goals but because they are alive (cf. Garrison, 2001), or as Ehn (1988, p. 145) puts it: „It [practice] is the human form of life". Actions unfold in and through the situations the actors are involved in. However, these situations are neither simple containers in which actors realize their preconceived ideas nor are they pre-structured settings that imprint specific behaviours on the actors. Instead they can be understood as evolving venues in which actors, bodies, artefacts, organisms, and other objects refer to and interrelate with each other. Rather than triggering certain actions, situations need to be framed and made sense of by the actors involved. Actions here are more like answers to a situation that raises questions (Hörning, 2004). As a situation is not given but comes into being only when framed as such, the relation between the actor and the situation is transactional. As situations are often ambiguous and uncertain, competent action not only requires an adaptation of the individual to recurrent circumstances and shared interpretations, giving rise to habits and routine ways of doing, but also procedures allowing the actor to cope with those situations in which established habits do not work. In being a joint venue for different individuals, artefacts, organisms, and other objects, both situations and actions are inherently social in nature. Social practices, from this perspective, hence are neither an accumulation nor abstraction of individual acts, but those patterns and styles of action that emerge from repeated interaction, allowing the participants to form a shared understanding of the situations they are involved in (cf. Hörning, 2001). The respective activities also do not take place in an abstract sphere but are carried to by embodied human beings that make use of, manipulate and react to the material arrangements around them.
It is against this background that practices can be understood as "embodied materially mediated arrays of human activity centrally organized around shared practical understanding" (Schatzki, 2001, p. 2). These arrays of activity are not static entities but evolving structurings that are re-enacted in concrete doings and sayings of human actors somewhere in objective space and time (cf. Schatzki, 2012). Social practices hence can be understood as the conventions and arrangements enacted by a certain group of people at a certain point in time. As practices cannot be separated from the concrete doings and sayings of the practitioners and the material assemblages in which these take place, particular practices are necessarily local and historical. Furthermore, as situations are usually open to different interpretations, they require an active framing of those engaged in them. Enacting a social practice therefore requires not only practical knowledge, but also knowledge about the overarching schemes that allow actors to interpret and define the situation they find themselves in (cf. Hörning, 2004). The practical know-how as well as the interpretive schemes can be understood as repertoires the actors use to cope with the situations they are facing.

4. Creative Design as Practice(d)

The practice-oriented position outlined above, opens up a specific perspective on collaborative efforts, including creative design. Drawing on the notion of practices as locally and historically situated conventions and arrangements enacted by a group of people, creative design can be understood as a mode of interaction in which individuals and collectives aim to cope productively with an otherwise indeterminate situation bringing forward novel artefacts and systems. The distinctive features of creative design as a mode of interaction hence entail (a) the active engagement with an otherwise indeterminate situation, constitutive for its creative nature, and (b) the advancement of an embodied object to be used by human beings, setting it apart from scientific or artistic products. As a mode of interaction creative design refers to a complex web of practices that orients the actors for example in the framing of the design task, the creation and assessment of various kinds of design artefacts, the integration of stakeholders, or the planning and coordination of the design process. However, these are not immaterial processes but closely bound and attuned to the physical organization of the workspace, tools, and artefacts available, as well as technical infrastructures. Respective practices not only provide orientation on how to do things but also on how to conceive things, the values to be pursued, the rules to follow, and the vocabulary to talk about all this (e.g. Goldkuhl, 2011).

Following the pragmatist conception of practice, as suggested by Schatzki (1996) and Hörning (2001), creative design denotes a concernful engagement with the world. This notion differs from accounts that aim to reconstruct creative design as a form of problem-solving or information processing as it assumes that this engagement results in an irreversible transformation of the situation the actors find themselves in. This perspective implies that creative design whether carried out by an individual or team is an inherently material and social process. While creative design, like any other field of practice, draws on locally and historically formed expectations as well as social and material configurations it is itself an open-ended endeavour requiring the actors to transcend established routines and make productive use of the resources available. Being able to attune to others and act in a way and to act in a way that others can relate to is more essential than compliance with pre-established rules (cf. Ehn, 1988). As a consequence, respective practices do not come with a fixed set of admissible moves but require the participants to collectively validate the aptness of a move once it has been made. Furthermore, practices of creative design do not exist in isolation but are interwoven with other practices allowing participants to borrow from or connect with these. The way creative design is practiced therefore heavily depends on the persons involved. In a nutshell, respective practices are characterized (a) by those involved and their relations, (b) the artefacts created and used, (c) the possible processes and moves, (d) the space in which the respective processes are taking place.
Thinking of creative design as locally and historically situated practices is not just a question of terminology but provides an alternative view on different forms of design, the importance of practical understanding and relations in action, the use of artefacts, and the role of methods and coordination.

4.1 Different Forms of Creative Design

While creative design can be understood as a particular mode of interaction with the world, the practice-oriented perspective also entails that creative design can be practiced in different ways. Hence, rather than treating creative design as a unique type of activity, creative design here is an umbrella term under which various "genres" can be identified. For example there are genres that draw on an engineering model of design adopting methods and procedures from science, while others are drawing on participatory, critical, or artistic ideas and models. All these genres, even though they exist in the realm of creative design, essentially indicate different practices that allow for different moves, bring together different types of actors, make use of different types of artefacts and take place in different spaces. For example in a participatory genre users might not just be involved as informants but as co-designers that have an active say in the design process and hence directly or indirectly shape the role of the other actors involved. Similarly, if a critical genre is enacted, the social embeddedness of the design process will be conceived differently as when an engineering model is chosen. From a practice-oriented perspective the distinction between the different genres of creative design is not just an analytic but a substantial one as they are themselves the result of socio-cultural developments. In fact, from a practice-oriented perspective the ongoing discussion of different design paradigms is misguided as long as these are seen as intellectual tools for design researchers decoupled from the actual practices of those engaged in design processes.

4.2 Practical Understanding and Relations in Action

Practices heavily depend on the actors involved. As the rules of a practice cannot be entirely explicated, it is even more important that the actors involved can attune to each other so that they are able to act in a way that others can understand and build on their moves. From this perspective it does not suffice to bring together a bunch of highly skilled and trained people, but to let them get acquainted with each other in the process of continuous interactions, so that they develop a mutual understanding of each others ways of working, skills, and attitudes. In contrast to a cognitivist conception of collaborative design, collaboration not simply adds an additional layer of complexity but is constitutive for the practices a team can draw on and the way these are enacted. For example, the ability to communicate and exchange creative ideas is essential to collaborative creative design (e.g. Mamykina, Candy, Edmonds, 2002). However, to devise a shared language cannot be attributed to any of the actors involved but is itself an achievement of and bound to the very collaborative effort. The fact that practical understanding is an ongoing achievement rather than a prerequisite does not only

hold for the processes within a design team but also for the way design efforts are socially embedded and interrelated with other practices. For example the present proliferation of "design-thinking" as a particular genre cannot be understood in isolation but only in relation to other discourses such as those in management or politics (cf. Tonkinwise, 2011).

4.3 Design Artefacts as Non-Representational Entities

Commonly, design artefacts are understood as representational devices that essentially provide information about some target object, such as a certain phenomenon, a set of data, a theory, or a product. In contrast, a practice-oriented perspective implies a non-representational view on artefacts, in which these are understood as epistemic objects that are created and constantly transformed while being used in the design process (cf. Knuuttila, 2005; Gedenryd, 1988). The point is that the meaning and information relevant to the design process is not a property inscribed into the design artefact, be it a sketch, a technical drawing, a model or a prototype, but that meaning and information are relational properties arising from the artefact in use. Such a non-representational view on artefacts has consequences for the understanding of both, the individual as well as the collaborative creation and work with design artefacts. For example, as argued by Buxton (2007), the point of a sketch is not so much in its content but in the possible interpretations it gives rise to. Similarly, in collaborative settings, design artefacts are not just means to convey a specific idea or provide boundary objects but they are means to actively negotiate these boundaries and even provoke dissent and alternative perspectives. For example, whether a certain representational format, such as a 3D- printout of a piece of furniture is legitimate and appropriate cannot be assessed a priori but only based on the responses it gives rise to. As a consequence, the quality or utility of a design artefact is basically a function of its uptake and utilization by the collaborators instead of its inherent characteristics.

4.4 Methods and Coordination

Finally, practices are more than methods in that they entail not only an understanding of the explicit rules but heavily depend on the participants' skills and ingenuity to interpret, and even break the rules. To make this difference more clear, „brainstorming" can be considered both as a method as well as a practice. As a method brainstorming would be defined in terms of its explicit rules such as to defer judgment and to reach for quantity, which are built into a respective process model (e.g. Osborn, 1963). However, if we look at brainstorming as an enacted practice, the rules and process model are of heuristic value at best. For example, a participant neither can effectively be sure that an informative question is not understood as judgment by the recipient nor that a harsh and pointed judgment could not exactly be what is needed to trigger a bunch of new ideas in a certain situation. Again, the conceptual distinction between design methods and practices is not just an analytic one, as methods cannot be taken for granted, but have to be continuously interpreted and enacted by the practitioners. A practice-oriented perspective does not render design methods irrelevant but draws attention to the different ways in which methods are introduced and enacted in practice.

5. Conclusions

In this paper we have outlined a conception of collaborative creative design based on a practice-oriented perspective on human action. This perspective differs from cognitivistic accounts that conceptualize creativity and design as a form of complex information processing. We have argued that respective models fall short to account for the emergent properties and structures that arise out of the interaction of human actors with their environment and hence have problems to account for the social and material contingencies out of which different forms of design take shape. A practice-based perspective, which is also in line with recent proposals in the field of design research (e.g. Ehn, 1988, 2008; Shove, Watson, Hand & Ingram, 2007), shifts focus from generic models and general normative accounts towards the practical understandings and relations formed in local and historically bound contexts. This perspective provides an alternative take on the dynamics in and through which design artefacts become productive resources and stresses the tight interplay or reproduction and change.

While our primary intent has been to open up a new perspective on collaborative creative design, the contribution we made in this paper is limited in two ways. First, the perspective we sketched is not a

full-fletched theory of collaborative creative design, but only provides a conceptual framework on which more specific theories can be formulated. However, we believe that this conceptual framework lends itself to a more integrative understanding of the various factors that shape the creative endeavours enacted in a particular setting than those provided by substantialist accounts. Second, the practice-oriented position outlined in this paper is just one of several post-cognitivist frameworks that have been applied to the description and analysis of collaborative creative design, including for example Distributed Cognition (e.g. Fischer, 2000), Activity Theory (e.g. Kaptelinin & Nardi, 2006), Actor-Network Theory (e.g. Binder, et al. 2011), or Systems Theory (e.g. Jonas, 2007). Even though an elaborate comparison of these conceptual frameworks is beyond the scope of this paper, we contend that these frameworks either fall back into some variant of substantialist worldview and/or downplay the proactive and inventive nature of human interactions (cf. Richter, Allert, Ruhl & Asmussen, 2014). Finally, adopting a practice-oriented perspective not only challenges current conceptions of collaborative creative design but also has implications for a respective research agenda. Conceptualizing practices as situated phenomena puts emphasis on the particularity and multiplicity of creative design. Hence, rather than striving for nomothetic accounts of creativity and the identification of invariant configurations that hold across settings, practice-oriented research sets out to depict the idiosyncracies of creative efforts, trying to figure out how invariants in the way design is practiced actually come into being, how practices spread across situations, and how individuals can grow into and eventually transform these practices. Being serious about the situated and evolving nature of social practice, research has to refrain from universal claims and simple recipes. Instead of aiming at an abstract theory of creative design, a practice-oriented perspective shifts focus towards the theories and models made used of by the practitioners. To properly account for the details and contingencies of local practice, in-depth case studies, but also comparative and interventionist approaches appear to be particularly suitable. More precisely, a comprehensive research agenda would entail (a) the elicitation of local practices, including surface structures, patterns of interaction, and epistemic frames, (b) the tracing of practices over time to understand their dynamics and evolution, (c) the comparison of practices across sites to understand their variability, and (d) interventionist studies to understand the mechanisms to stabilize or destabilize practices. Empirical methods towards that end would heavily borrow from ethnography and other forms of qualitative data collection including for example field observations, interviews, artefact and document analysis (cf. Schatzki, 2012).

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